402

AM/FM TUNER

402

AM/FM TUNER

SERVICE MANUAL

NAD

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SERVICE SAFETY PRECAUTIONS

1. Use exact replacement parts for critical locations, marked "⚠" on parts list.

2. Return lead dress to original position, and re-install protective covers.

3. Before returning to customer, test for shock hazard; use either method A or B:

A. Leakage test, "cold":

1. Unplug AC cord, turn power switch ON.
2. Connect one lead of High Voltage Insulation Tester to both prongs of AC plug.
3. Touch other lead to all exposed metal parts.
4. Impedance measurement must be 0.3 - 5.0 Megohms.

B. Leakage test, "live":

1. Plug unit directly into AC outlet; do not use isolation transformer.
2. Connect one lead of Leakage Current Tester to earth ground.
3. Touch other lead to all exposed metal parts.
4. Leakage measurement must be less than 0.5 milliamps.

SPECIFICATIONS

Specifications are measured in accordance with ANSI-IEEE Standard 185 (1975), i.e. IHF T-200 for tuners.

FM TUNER SECTION

Usable sensitivity (98MHz, 75 ohms) ..... AH= 1.5uV
C= 2.0uV

50dB quieting — Mono= 2.5uV
Stereo= 30.0uV

60dB quieting — Mono, AH= 7.0uV
C= 9.0uV
Stereo=100.0uV

Capture ratio (45dBf) ..... AH= 2.0dB
C= 4.5dB

IF rejection 75dB

Image rejection 74dB

AM suppression 54dB

Selectivity, alternate channel ..... AH= 60dB
C= 78dB

Subcarrier suppression (19kHz and 38kHz) 60dB

THD ..... Mono, 1kHz,100% mod., AH= 0.20 %
50% mod., C= 0.20 %
Stereo L–R, 1kHz,100% mod., AH= 0.12 %
50% mod., C= 0.30 %
Stereo L+R, 1kHz,100% mod., AH= 0.20 %
50% mod., C= 0.20 %

Signal/Noise ratio (65dBf IHF wtd) ..... Mono= 73dB
Stereo= 70dB

Frequency response (30Hz-15kHz) ..... ±0.7dB

Channel separation (1kHz) ..... AH= 41dB
C= 40dB

Center tune sensitivity ..... 3.2 - 6.3uV

Stereo indicator ..... On @ 5.6 - 8.9uV
Off @ 4.5 - 7.1uV

Autosearch sensitivity ..... 6.3 - 17.8uV

AM TUNER SECTION

Usable sensitivity 7uV

Selectivity 19dB

Image rejection 36dB

Signal/Noise ratio (1mV input) 45dB

THD (30% mod., 1mV input) ..... 2 %

Autosearch sensitivity ..... 28.2 - 141.2uV

IF rejection 46dB

PHYSICAL

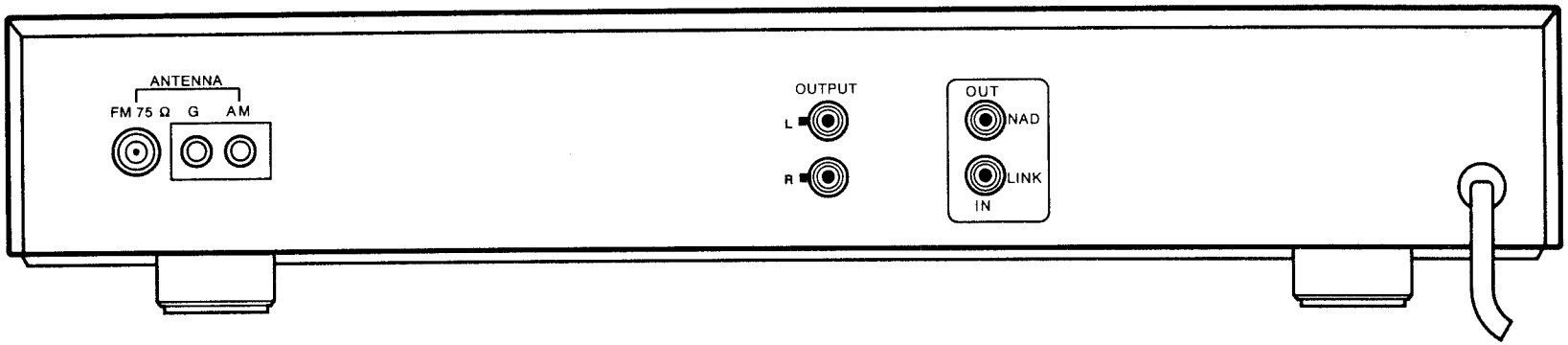
Dimensions (Width x Height x Depth) ..... 420 x 76 x 295mm

Net weight ..... 3.6 kgs(8 lbs)

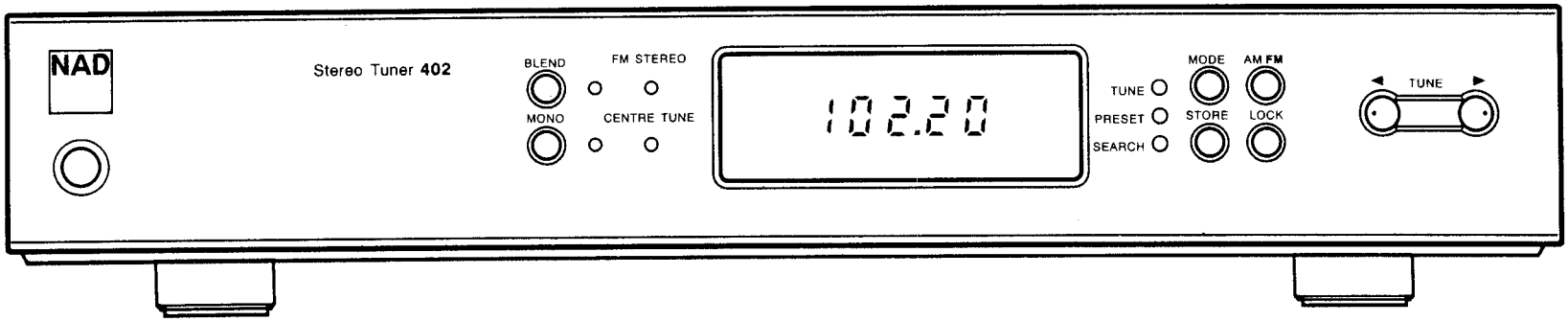
Shipping weight ..... 4 kgs(9 lbs)

Power consumption at 120 or 230VAC, 50/60Hz 15W

REAR PANEL



FRONT PANEL



ALIGNMENT PROCEDURE

NOTE:
1. To change AM steps from 9kHz to 10kHz and vice versa, press the **MODE** and **SCAN UP** buttons simultaneously for three seconds.
2. To reset the presets, press the **AM FM** and **STORE** buttons simultaneously for three seconds.

FM SECTION

A. PREPARATION
1. Set stereo modulator to mono mode with 1kHz modulating signal unless otherwise stated.
2. Set signal generator to FM mode with 75kHz deviation.
3. Store the following frequencies: 98MHz, 87.5MHz, 108MHz, 90MHz, and 106MHz.
4. Note: RF levels are open circuit voltages of signal generator with 75 ohms output impedance.

B. OSCILLATOR TUNING VOLTAGE
1. Connect DVM between TP6 and ground.
2. Tune to 87.5MHz and check DVM for a reading of 3VDC ±0.5V.
3. Tune to 108MHz and check DVM for a reading of 20.5VDC ±0.5V.

   If either of the above is out of tolerance, adjust FE4 (oscillator coil) until both readings are within tolerance.

C. I.F.
1. Connect DVM between TP4 (VA) and TP5 (VB).
2. Apply 10.7MHz (90dBu) via 1Kohm resistor to TP7.
3. Adjust L8 for 0VDC ±50mV reading on DVM.
4. Adjust L9 until minimum THD is achieved at audio output.
5. Repeat (3) and (4) until no further improvement can be made.

   When adjusting L9, two nulls can be found. With the core on top, adjust until the second one is found as this has lower THD. Correct position of the core is normally just above the metal casing.

D. SYNTHESIZER I.F. TRACKING
1. Maintain connection of DVM but disconnect 10.7MHz tap at TP7.
2. Apply 98MHz (60dBu) to FM antenna input and tune to 98MHz.
3. Adjust C16 for 0VDC ±20mV reading on DVM.
4. Fine adjust L9 for minimum THD.
5. Repeat (3) and (4) until no further improvement can be made.

E. FRONT-END I.F.
1. Connect DVM between TP3 (level) and ground.
2. Turn R48A fully clockwise and R48 fully counterclockwise.
3. Apply 98MHz (12dBu) to antenna input.
4. Carefully adjust FE5 to obtain minimum reading on DVM. There should only be one minimum.

F. R.F.
1. Apply 98MHz (6dBu) to antenna input.
2. Check if THD is better than 3%. If not, proceed to (3).
3. Adjust FE1, FE2, and FE3 by squeezing or stretching using a non-metallic tool until THD is better than 3%.
4. Check THD at 90MHz and 106MHz with 7dBu input. If THD is more than 3% for both frequencies, re-adjust until required THD is met.

G. AUTOSEARCH LEVEL

1. Turn R48 fully clockwise and R48A fully counterclockwise.
2. Set stereo modulator to L=R mode and apply 98MHz (18dBu) to antenna input.
3. Adjust R48 counterclockwise until center tune LED lights up.
4. Increase antenna input signal to 22dBu and adjust R48A clockwise until FM stereo LED lights up.
5. Check if autosearch operation is working properly at antenna input level of 28dBu.

   Center tune LED should be at least 2dBu higher than FM stereo LED.

H. STEREO SEPARATION AND PILOT SUPPRESSION

1. Modulate L-only at 98MHz (60dBu) and adjust R62 for minimum output on right channel.
2. Modulate R-only and adjust R62 for minimum output on left channel.
3. Repeat (1) and (2) until readings are the same and within specification.
4. Turn off modulating signal but leave pilot tone.
5. Adjust FL401 and FL402 for minimum output on left and right channels, respectively.

AM SECTION

A. PREPARATION

1. Set signal generator to AM mode with 1kHz at 30% modulation.
2. Connect 22pF ceramic capacitor between signal generator and AM antenna input terminal. Capacitor should be as close as possible to antenna input terminal.
3. Store the following frequencies: 603/600kHz, 999/1000kHz, and 1404/1400kHz.

B. OSCILLATOR TUNING VOLTAGE

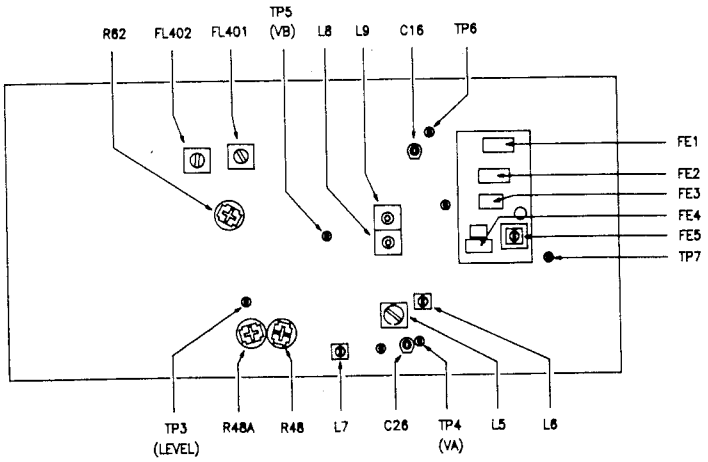
1. Connect DVM between TP6 and ground.
2. Tune to 603/600kHz and adjust L6 for 1.75VDC ±50mV reading on DVM.

C. I.F.

1. Apply 999/1000kHz (45dBu) to antenna input.
2. Tune to 999/1000kHz and adjust L7 for maximum reading on audio output.

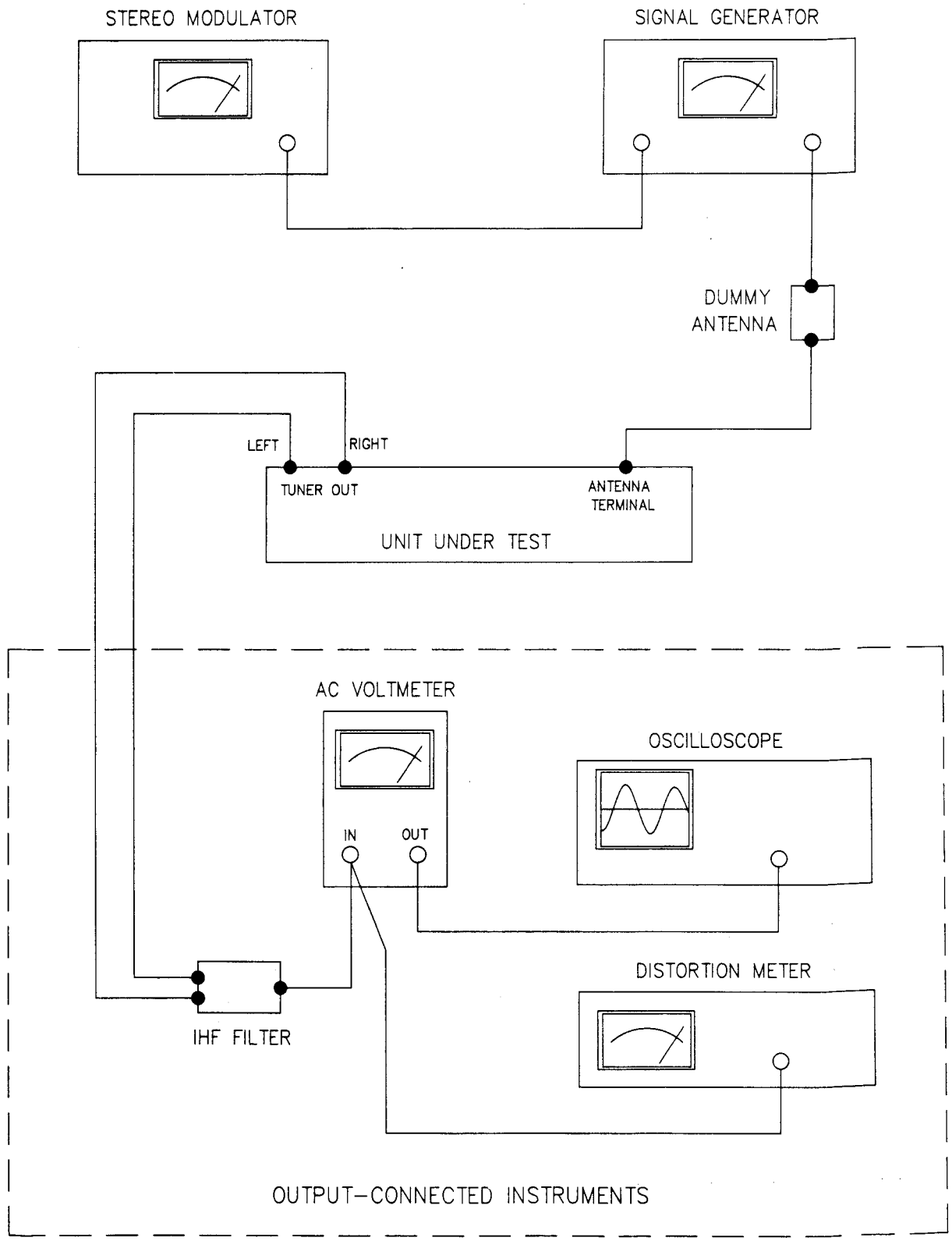
D. R.F.

1. Apply 603/600kHz (45dBu) to antenna input.
2. Tune to 603/600kHz and adjust L5 for maximum reading on audio output.
3. Apply 1404/1400kHz (45dBu) to antenna input.
4. Tune to 1404/1400kHz adjust C26 for maximum reading on audio output.
5. Repeat (1) to (4) until no further improvement can be made.



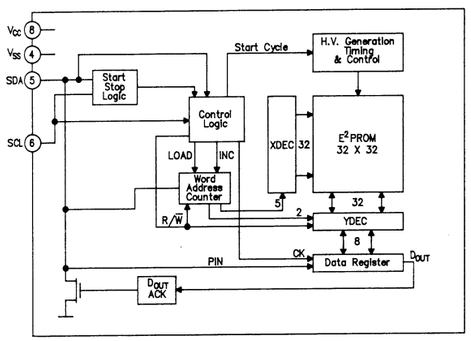
TUNER ADJUSTMENT POINTS

INSTRUMENT SET-UP

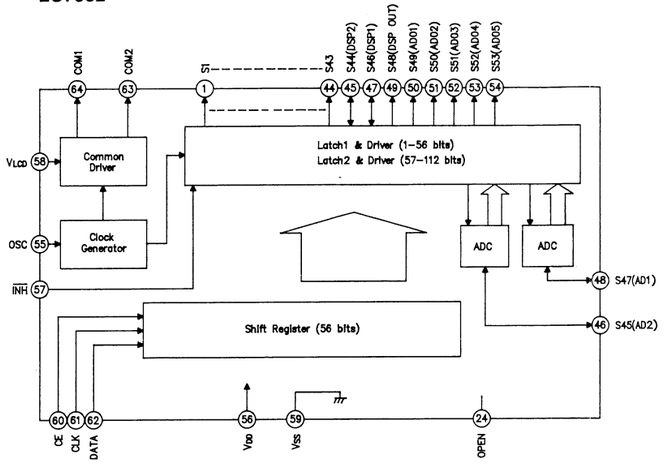


IC BLOCK DIAGRAMS

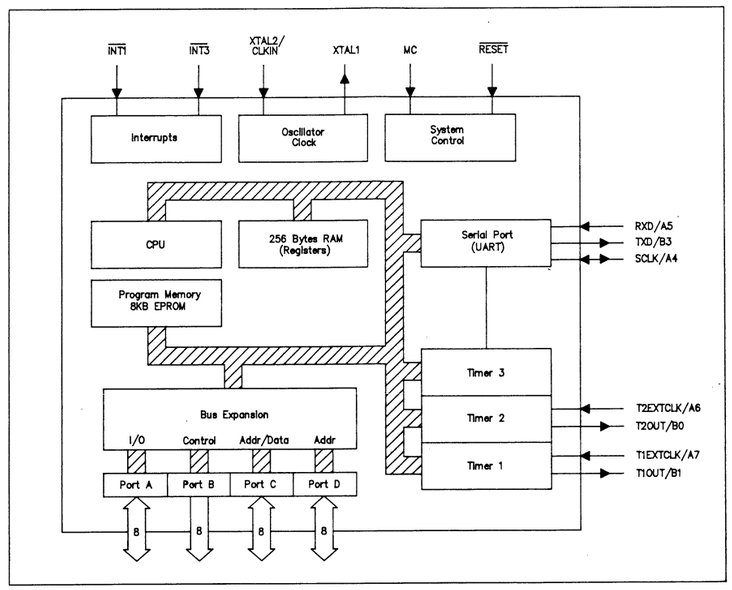
X24C01



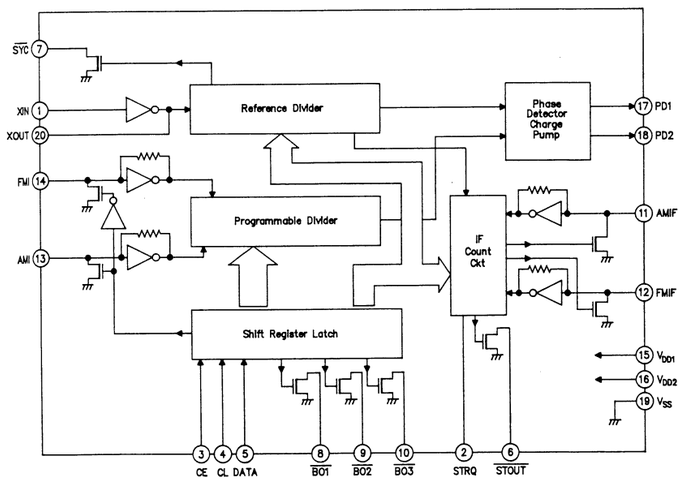
LC7582



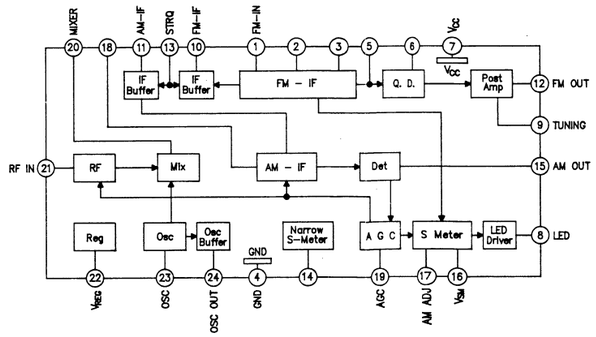
TMS70CX0



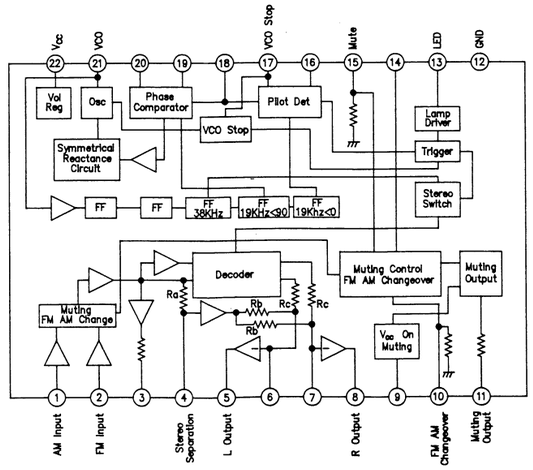
LM7000



LA1266

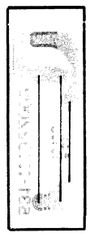


LA3401

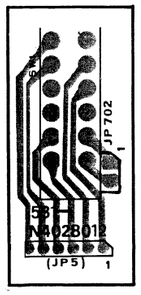


PCB LAYOUT

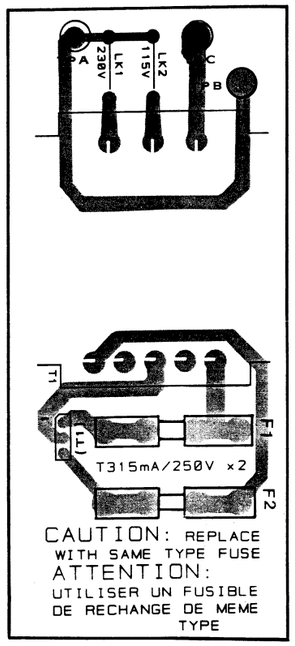
LAMP PCB



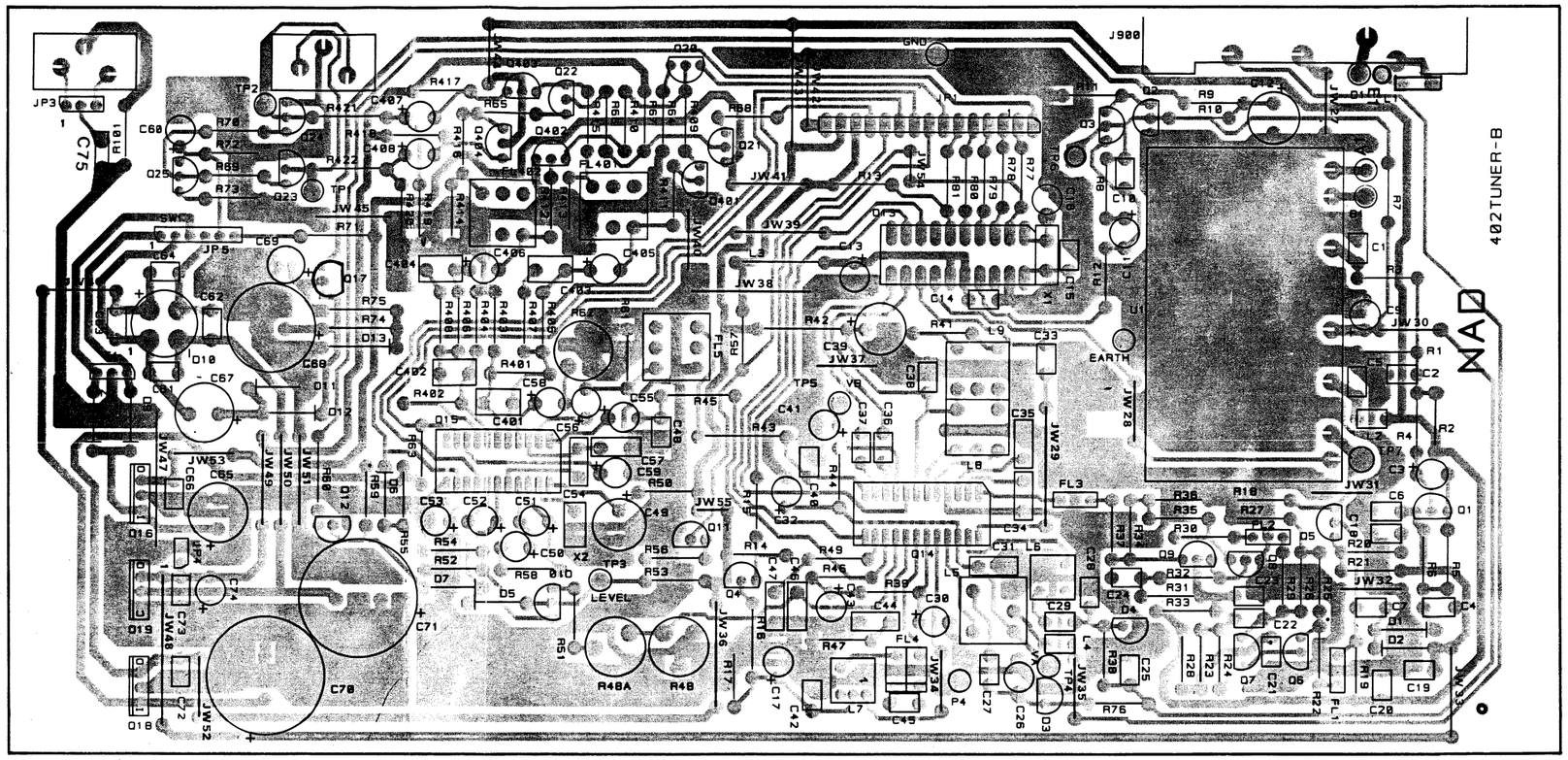
POWER SWITCH PCB



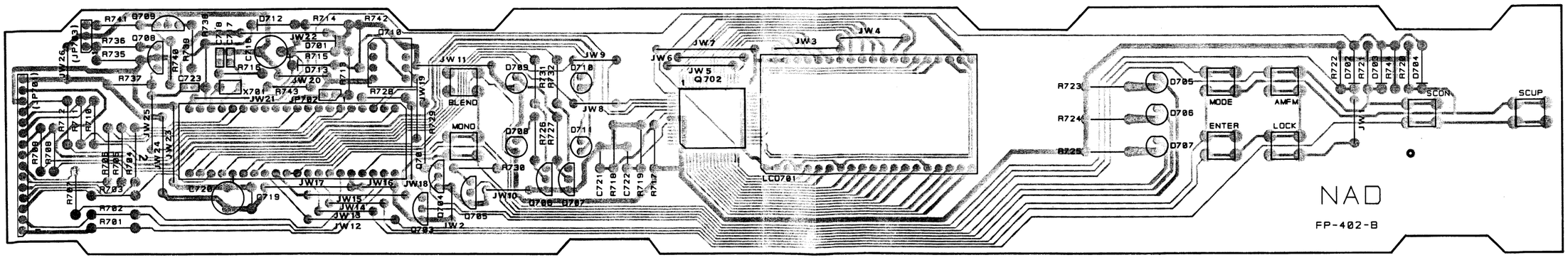
TRANSFORMER PCB



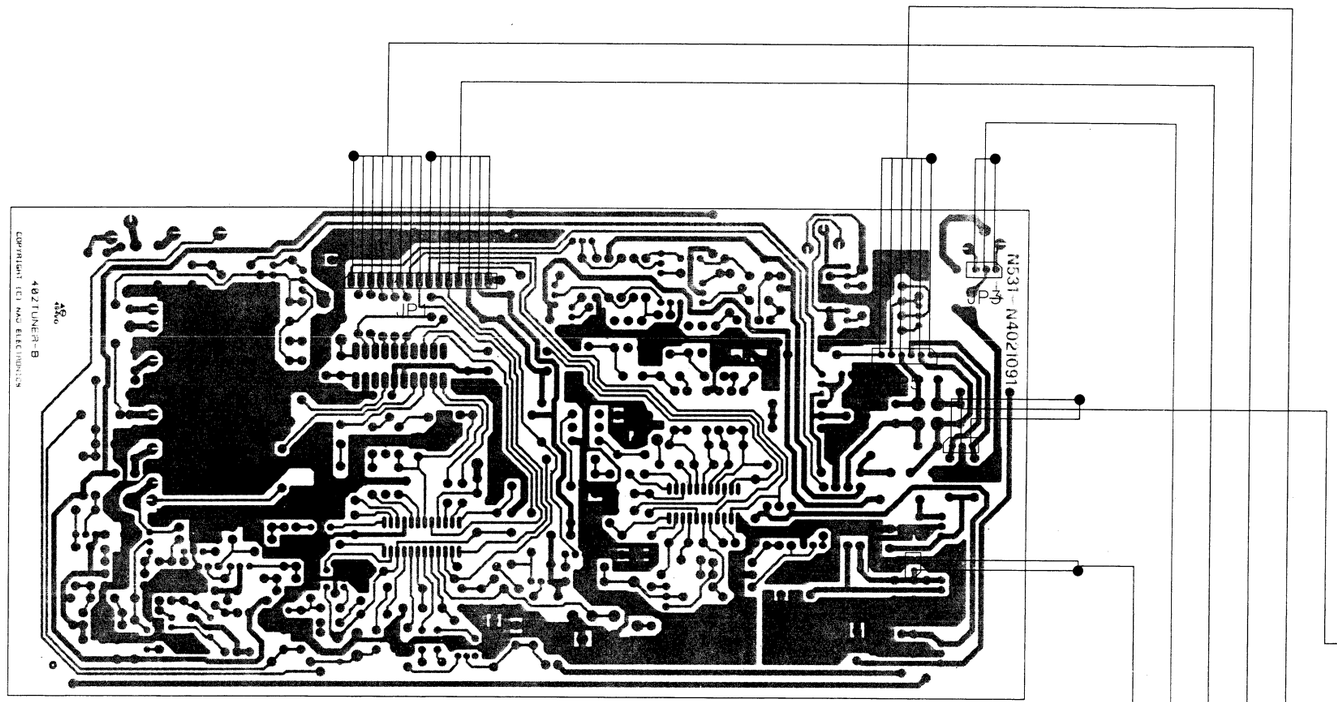
TUNER PCB

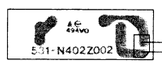


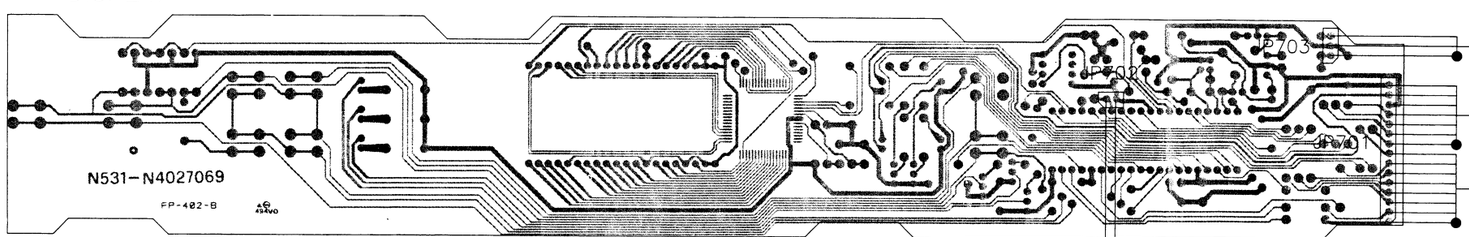
DISPLAY PCB

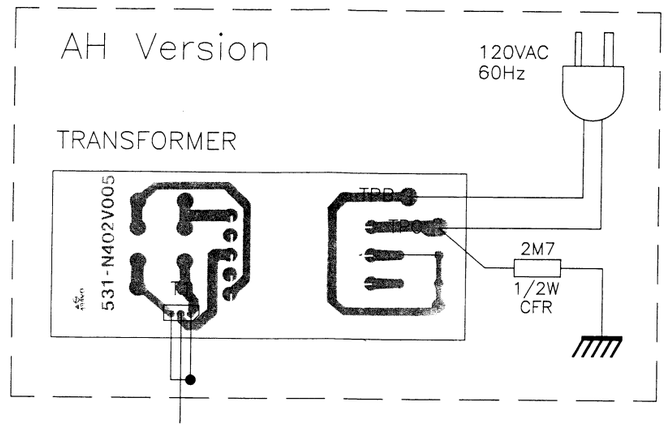


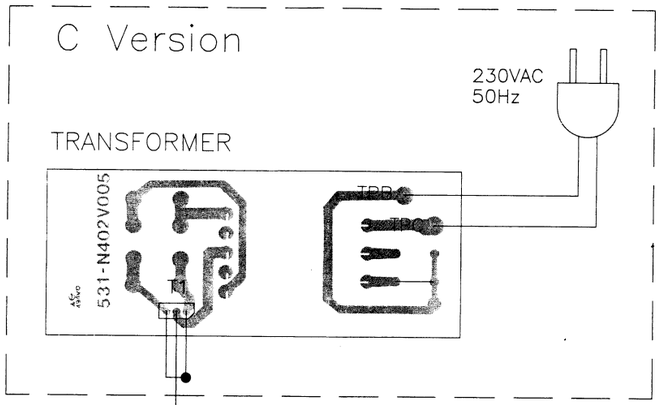
WIRING DIAGRAM

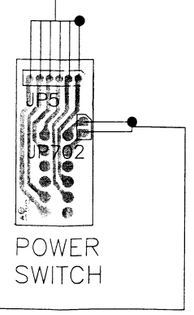






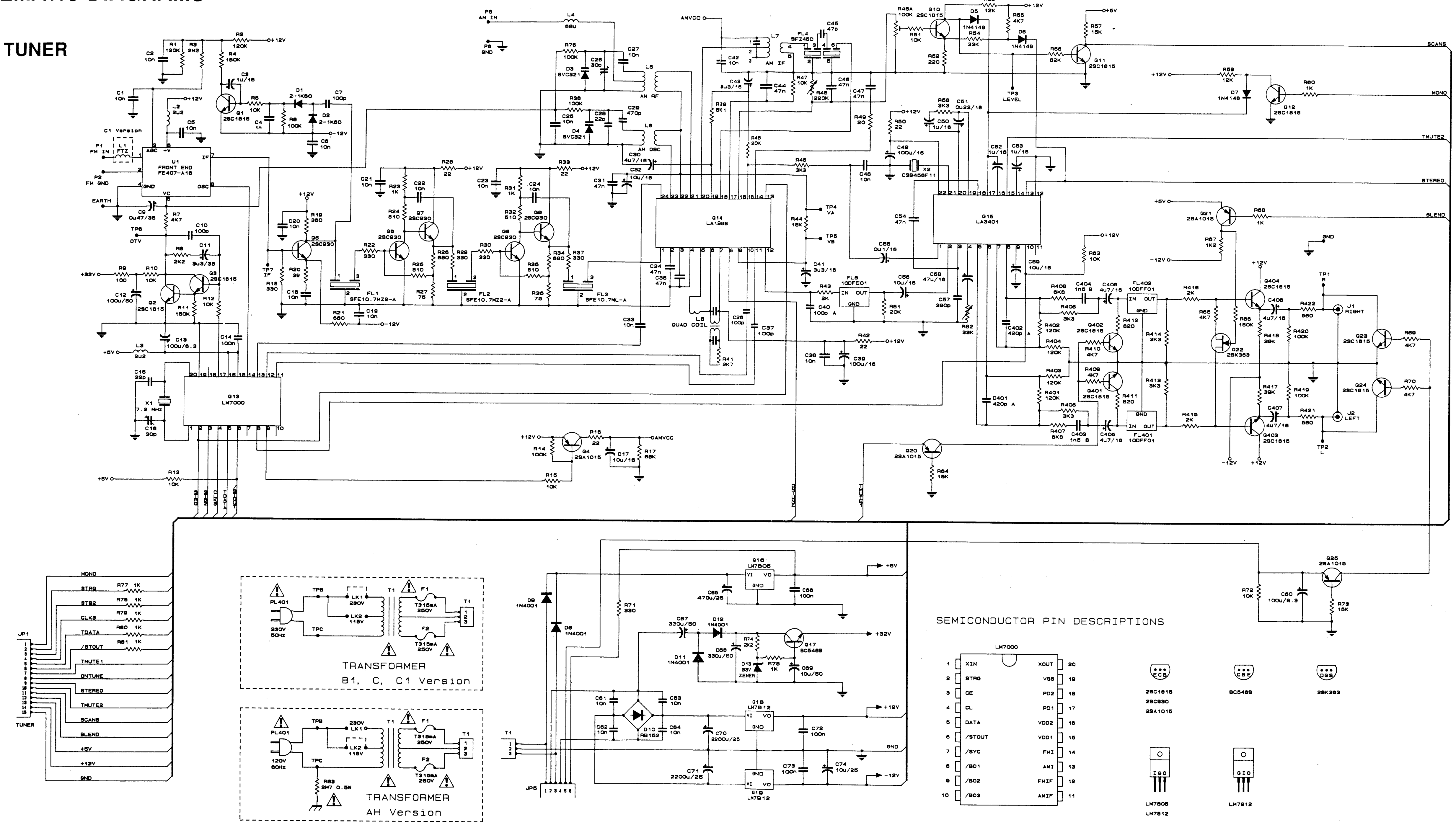


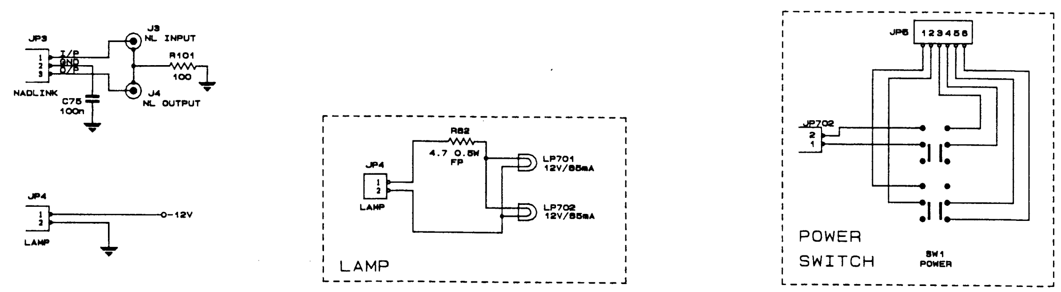




SCHEMATIC DIAGRAMS

TUNER





NOTES:

1. RESISTORS ARE CARBON FILM TYPES, 1/4W, 5% UNLESS OTHERWISE SPECIFIED. UNITS ARE IN OHMS. K = KILOHMS, M = MEGOHMS
2. CAPACITORS ARE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.
   - u – MICROFARADS
   - n – NANOFARADS
   - p – PICOFARADS
3. POWER SWITCH, SW1, IN OFF POSITION.
4. NL = NAD LINK
5.

COMPONENT	VERSION AH (75uS)	VERSION B1, C, C1 (50uS)
FL1, FL2	SFE10.7ML-A	SFE10.7MZ2-A
R18	220	330
R19	330	360
R20	75	39
R25, R35	220	510
R401, R402	82K	120K
C401, C402	910p	420p

SEMICONDUCTOR PIN DESCRIPTIONS

LM7000

Pin	Function	Function	Pin
1	XIN	XOUT	20
2	STRQ	VSS	19
3	CE	PD2	18
4	CL	PD1	17
5	DATA	VDD2	16
6	/STOUT	VDD1	15
7	/SYC	FMI	14
8	/B01	AMI	13
9	/B02	FMIF	12
10	/B03	AMIF	11

LA1266

Pin	Function	Function	Pin
1	FM IN	OSC OUT	24
2		OSC	23
3		VREG	22
4	GND	RF IN	21
5		MIXER	20
6		AGC	19
7	VCC	AM IF	18
8	LED	AM ADJ	17
9	TUNING	VSM	16
10	FM IF	AM OUT	15
11	AM IF		14
12	FM OUT	STRQ	13

LA3401

Pin	Function	Function	Pin
1	AM IN	VCC	22
2	FM IN	VCO	21
3			20
4	STEREO SEP		19
5	L OUT		18
6		VCO STOP	17
7			16
8	R OUT	MUTE	15
9			14
10	AM/FM	LED	13
11	MUTE OUT	GND	12

ECB: 2SC1815, 2SC930, 2SA1015

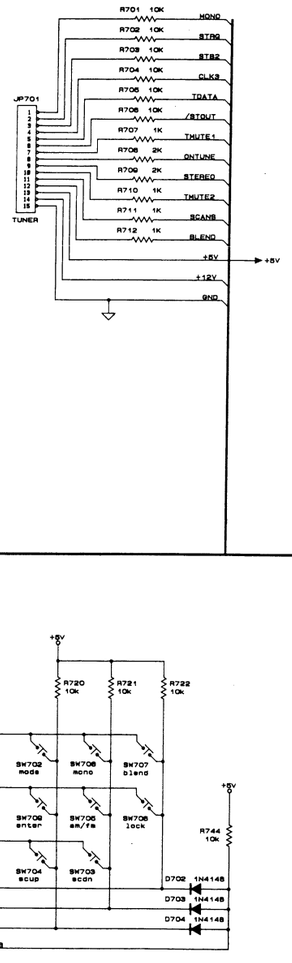
CBE: BC546B

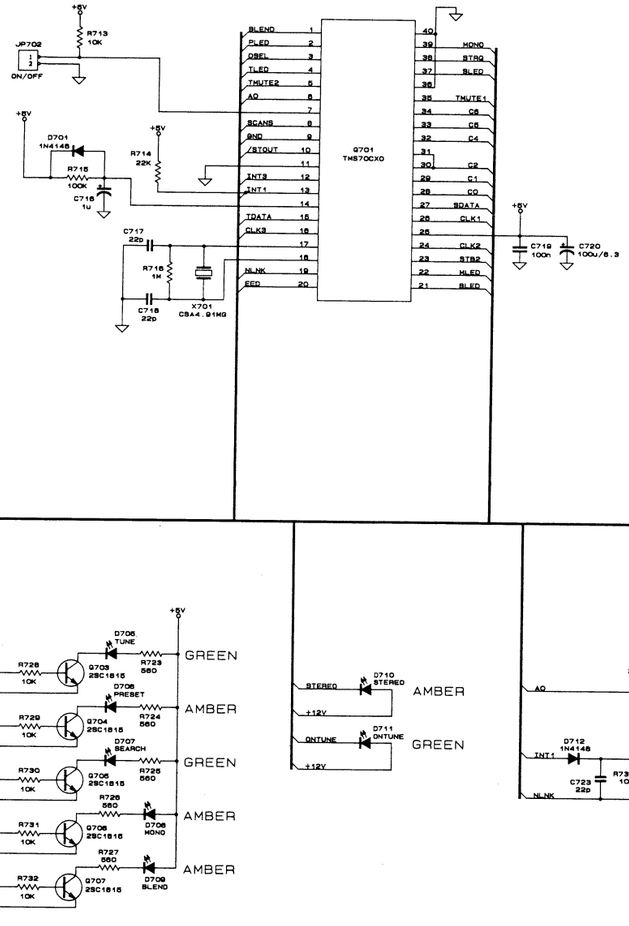
DGS: 2SK363

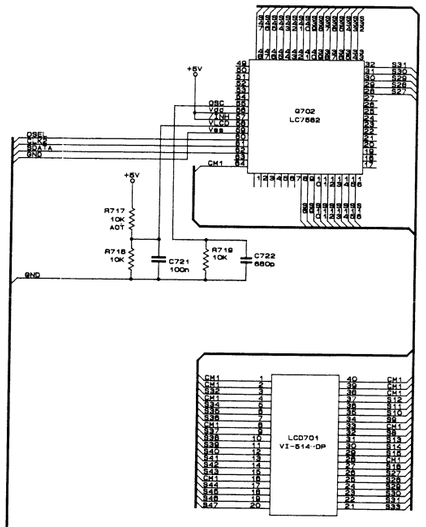
IGO: LM7805, LM7812

GIO: LM7912

DISPLAY







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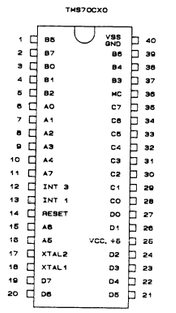
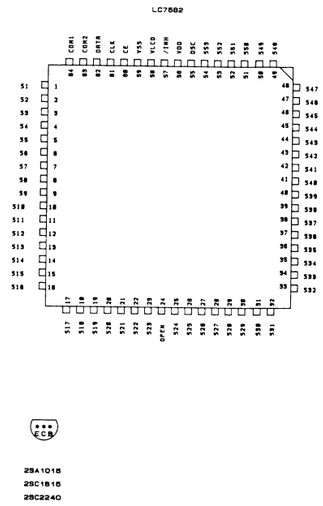
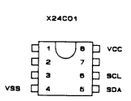
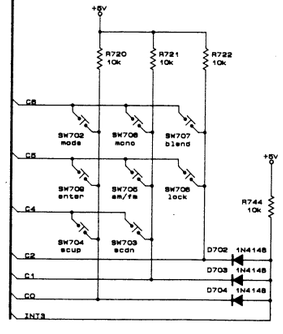
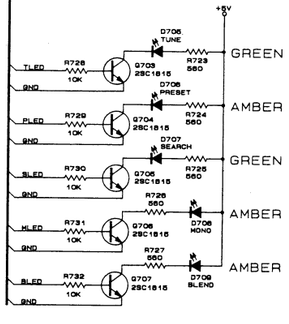


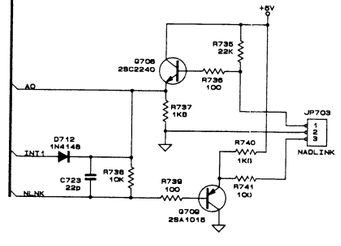


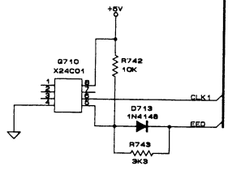


2SA1015
2SC1815
2SC2240









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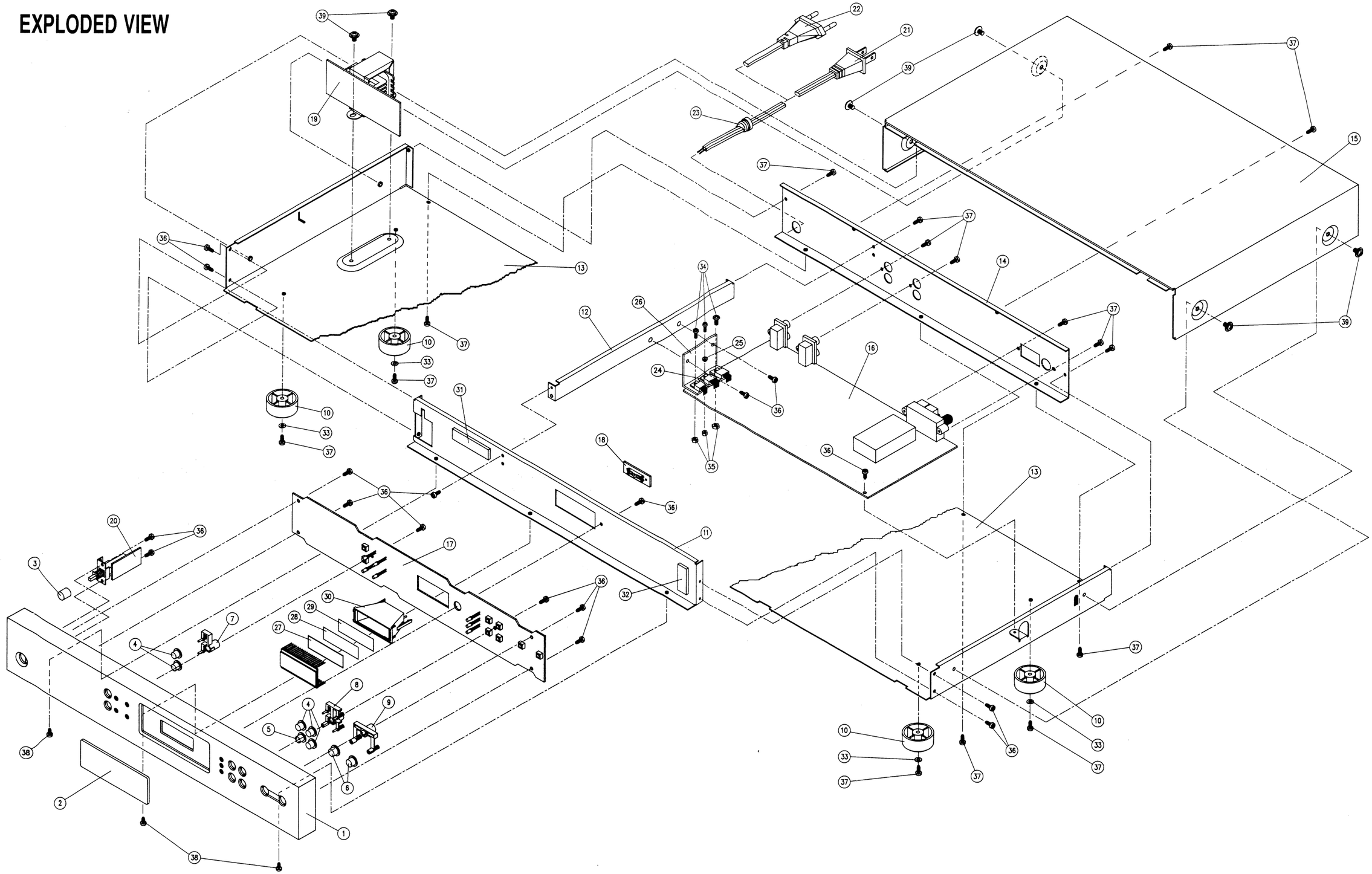
   n - NANOFARADS
   p - PICOFARADS

EXPLODED VIEW



EXPLODED VIEW PARTS LIST

ITEM NO.	PART NUMBER	DESCRIPTION		QTY.
1	N14619201-0	Fascia		1
2	N37143206-0	Molded Window		1
3	N2437510B-0	Button, 9.5 Dia., Gloss, Green, POWER		1
4	N24361601-0	Button, 7.0 Dia., Textured, Black, BLEND, MONO, MODE, AM FM, LOCK		5
5	N2436170B-0	Button, 7.0 Dia., Textured, Red, STORE		1
6	N24361503-0	Button, 8.0 Dia., Textured, TUNE		2
7	N2437520B-0	Button Spring A		1
8	N2437530B-0	Button Spring B		1
9	N2437540B-0	Button Spring C		1
10	N41519371-1	Rubber Foot		4
11	N14023130-0	Plate, Front		1
12	N14023150-0	Strap		1
13	N14023110-0	Plate, Bottom		1
14 * C	N14023170-0	Plate, Back, C, C1		1
14 * AH	N14023140-0	Plate, Back, AH		1
15	N14023120-0	Cover, Top		1
16	N17110791-0	PCB, Tuner, without components		1
17		PCB, Display, without components	(Part of Item 16)	1
18		PCB, Lamp, without components	(Part of Item 16)	1
19		PCB, Transformer, without components	(Part of Item 16)	1
20		PCB, Power Switch, without components	(Part of Item 16)	1
21	N70093100-1	AC Cord, AH		1
22	N70093110-0	AC Cord, C		1
23	N41519461-0	Strain Relief Bushing		1
24	N31003161-0	Mica Sheet		1
25	N41519931-0	Insulating Bushing		1
26	N54000761-0	Regulator Heatsink		1
27	N37141006-0	Diffuser Lens, 1mm PC Sheet		1
28	N3714110B-0	Lee Filter, NO217, Blue Diffuser		1
29	N3714120B-0	Lee Filter, NO224, Blue Frost		1
30	N21502171-1	Lightbox (White Reflector)		1
31	N41519911-0	Foam Pad A, 52 x 13 mm		1
32	N41519921-0	Foam Pad B, 20 x 13 mm		1
33	28422865-0	Washer, ID=3 OD=7		4
34	29043010-0000	M3x10mm, Yellow Zinc		3
35	28363005-0	M3x0.5P Hex Cap Nut		3
36	29543008-0000	Tapping, 3x8mm, Yellow Zinc		17
37	29543008-3000	Tapping, 3x8mm, Black Zinc		16
38	29543006-3000	Tapping, 3x6mm, Black Zinc		3
39	29004006-3010	M4x0.7Px6mm with Flat Washer		6

ELECTRICAL PARTS LIST

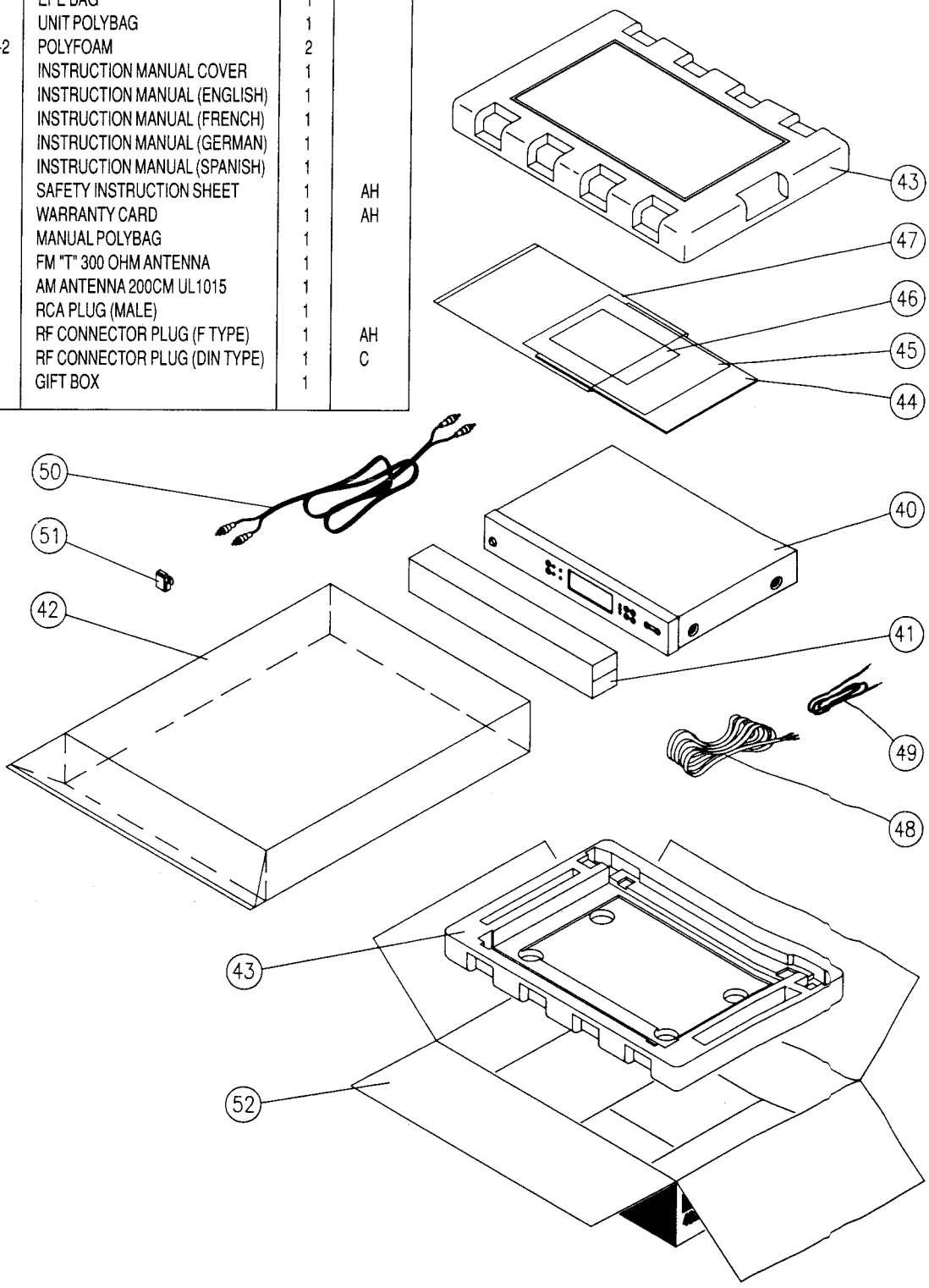
SYMBOL NO.	PART NUMBER	DESCRIPTION					REMARKS
DISPLAY							
C716	157F105Z-5-IU	Capacitor	Electrolytic	1uF	+80-20%	50V	
C717, C718	15CH220J-5-GG	Capacitor	Ceramic	22pF NPO	±5%		
C719	150F104Z-5-IU	Capacitor	Ceramic	0.1uF	+80-20%	50V	
C720	157D107Z-5-KW	Capacitor	Electrolytic	100uF	+80-20%	16V	
C721	150F104Z-5-IU	Capacitor	Ceramic	0.1uF	+80-20%	50V	
C722	150F681K-5-GG	Capacitor	Ceramic	680pF	±10%	50V	
C723	150F220J-5-IF	Capacitor	Ceramic	22pF	±5%	50V	
D701, D702	48041480-2	Diode		1N4148			
D703, D704	48041480-2	Diode		1N4148			
D705	N37003512-G	LED	3mm Green,	L-424GDT,	Tune		
D706	N37003513-Y	LED	3mm Yellow,	L-424YDT,	Preset		
D707	N37003512-G	LED	3mm Green,	L-424GDT,	Search		
D708, D709	N37003513-Y	LED	3mm Yellow,	L-424YDT,	Mono		
D710	N37003513-Y	LED	3mm Yellow,	L-424YDT,	FM Stereo		
D711	N37003512-G	LED	3mm Green,	L-424GDT,	Centre Tune		
D712, D713	48041480-2	Diode		1N4148			
LCD701	N24600900-0	LCD	Varitronix Display	VI514-DP14.5-TC-S-N-12			
Q701	N31303530-0	IC	Microcontroller	TMS70C82 NAD402-01			
Q702	N31303420-0	IC	Sanyo LCD Driver	LC7582A			
Q703, Q704	N4851815Y-5	Transistor		2SC1815-Y			
Q705, Q706	N4851815Y-5	Transistor		2SC1815-Y			
Q707	N4851815Y-5	Transistor		2SC1815-Y			
Q708	N485240GR-5	Transistor		2SC2240GR			
Q709	N4851015Y-5	Transistor		2SA1015-Y			
Q710	N31303450-0	IC	Xicor EEPROM	X24C01P			
SW702, SW703	N52003011-0-01	Switch	Tact,4-pin	mode, scdn			
SW704, SW705	N52003011-0-01	Switch	Tact,4-pin	scup, am/fm			
SW706, SW707	N52003011-0-01	Switch	Tact,4-pin	lock, blend			
SW708, SW709	N52003011-0-01	Switch	Tact,4-pin	mono, enter			
X701	N27030120-0	Ceramic Resonator		4.91MHz	CSA4.91MG		
LAMP							
LP701, LP702	N24500636-0	Lamp	Festoon	12V, 85mA			
R82	N47174R7J-2-P	Resistor	Metal Oxide	4.7	1/2W	±5%	
POWER SWITCH							
JP702	N21028202-0	Headers	2-pins				
SW1	N52003091-0-01	Switch	Push, with Lock	SPUN12,	Power		
TUNER							
C1, C2	150F103Z-5-II	Capacitor	Ceramic	0.01uF	+80-20%	50V	
C3	157F105M-5-IU	Capacitor	Electrolytic	1uF	±20%	50V	
C4	150F102K-5-II	Capacitor	Ceramic	1000pF	±10%	50V	
C5, C6	150F103Z-5-II	Capacitor	Ceramic	0.01uF	+80-20%	50V	
C7	150F101J-5-IF	Capacitor	Ceramic	100pF	±5%	50V	
C9	157F474Z-5-IU	Capacitor	Electrolytic	0.47uF	+80-20%	50V	
C10	150F104Z-5-IU	Capacitor	Ceramic	0.1uF	+80-20%	50V	
C11	157F335M-5-IU	Capacitor	Electrolytic	3.3uF	±20%	50V	
C12	157F107Z-5-OW	Capacitor	Electrolytic	100uF	+80-20%	50V	
C13	157C107Z-5-IU	Capacitor	Electrolytic	100uF	+80-20%	10V	
C14	150F104Z-5-IU	Capacitor	Ceramic	0.1uF	+80-20%	50V	
C15	15CH220J-5-GG	Capacitor	Ceramic	22pF NPO	±5%		
C16	N15510210-M	Capacitor	Trimmer, 6mm,	TZ03R300FR	30pF		
C17	157D106M-5-IU	Capacitor	Electrolytic	10uF	±20%	16V	
C18	150F103K-5-UU	Capacitor	Ceramic	0.01uF	±10%	50V	
C19, C20	150F103Z-5-II	Capacitor	Ceramic	0.01uF	+80-20%	50V	
C21	150F103Z-5-II	Capacitor	Ceramic	0.01uF	+80-20%	50V	

SYMBOL NO.	PART NUMBER	DESCRIPTION					REMARKS
C22	150F103K-5-UU	Capacitor	Ceramic	0.01uF	±10%	50V	
C23	150F103Z-5-II	Capacitor	Ceramic	0.01uF	+80-20%	50V	
C24	150F103K-5-UU	Capacitor	Ceramic	0.01uF	±10%	50V	
C25	150F103Z-5-II	Capacitor	Ceramic	0.01uF	+80-20%	50V	
C26	N15510210-M	Capacitor	Trimmer, 6mm, TZ03R300FR		30pF		
C27	150F103K-5-UU	Capacitor	Ceramic	0.01uF	±10%	50V	
C28	15CH220J-5-GG	Capacitor	Ceramic	22pF NPO	±5%		
C29	158E471J-5-IQ	Capacitor	Polystyrene	470pF	±5%	25V	
C30	157F475M-5-IU	Capacitor	Electrolytic	4.7uF	±20%	50V	
C31	150F473Z-5-SG	Capacitor	Ceramic	0.047uF	+80-20%	50V	
C32	157D106M-5-IU	Capacitor	Electrolytic	10uF	±20%	16V	
C33	150F103Z-5-II	Capacitor	Ceramic	0.01uF	+80-20%	50V	
C34, C35	150F473Z-5-SG	Capacitor	Ceramic	0.047uF	+80-20%	50V	
C36, C37	150F101J-5-IF	Capacitor	Ceramic	100pF	±5%	50V	
C38	150F103Z-5-II	Capacitor	Ceramic	0.01uF	+80-20%	50V	
C39	157D107Z-5-KW	Capacitor	Electrolytic	100uF	+80-20%	16V	
C40	158D101J-5-IQ	Capacitor	Polystyrene	100pF	±5%	16V	
C41	157F335M-5-IU	Capacitor	Electrolytic	3.3uF	±20%	50V	
C42	150F103Z-5-II	Capacitor	Ceramic	0.01uF	+80-20%	50V	
C43	157F335M-5-IU	Capacitor	Electrolytic	3.3uF	±20%	50V	
C44	150F473Z-5-SG	Capacitor	Ceramic	0.047uF	+80-20%	50V	
C45	15CH470J-5-KG	Capacitor	Ceramic	47pF NPO	±5%		
C46, C47	150F473Z-5-SG	Capacitor	Ceramic	0.047uF	+80-20%	50V	
C48	150F103Z-5-II	Capacitor	Ceramic	0.01uF	+80-20%	50V	
C49	157D107Z-5-KW	Capacitor	Electrolytic	100uF	+80-20%	16V	
C50	157F105M-5-IU	Capacitor	Electrolytic	1uF	±20%	50V	
C51	157F224M-5-IU	Capacitor	Electrolytic	0.22uF	±20%	50V	
C52, C53	157F105M-5-IU	Capacitor	Electrolytic	1uF	±20%	50V	
C54	150F473M-5-SG	Capacitor	Ceramic	0.047uF	±20%	50V	
C55	157F104M-5-IU	Capacitor	Electrolytic	0.1uF	±20%	50V	
C56	157D106M-5-IU	Capacitor	Electrolytic	10uF	±20%	16V	
C57	150F391K-5-RF	Capacitor	Ceramic	390pF	±10%	50V	
C58	157D476M-5-IU	Capacitor	Electrolytic	47uF	±20%	16V	
C59	157D106M-5-IU	Capacitor	Electrolytic	10uF	±20%	16V	
C60	157D107Z-5-KW	Capacitor	Electrolytic	100uF	+80-20%	16V	
C61, C62	150F103Z-5-II	Capacitor	Ceramic	0.01uF	+80-20%	50V	
C63, C64	150F103Z-5-II	Capacitor	Ceramic	0.01uF	+80-20%	50V	
C65	157E477Z-5-S5	Capacitor	Electrolytic	470uF	+80-20%	25V	
C66	150F104Z-5-IU	Capacitor	Ceramic	0.1uF	+80-20%	50V	
C67, C68	157I337Z-5-Y9	Capacitor	Electrolytic	330uF	+80-20%	63V	
C69	157F106Z-5-IU	Capacitor	Electrolytic	10uF	+80-20%	50V	
C70, C71	157E228Z-5-6@	Capacitor	Electrolytic	2200uF	+80-20%	25V	
C72, C73	150F104Z-5-IU	Capacitor	Ceramic	0.1uF	+80-20%	50V	
C74	157E106Z-5-IU	Capacitor	Electrolytic	10uF	+80-20%	25V	
C75	150F104Z-5-IU	Capacitor	Ceramic	0.1uF	+80-20%	50V	
C401, C402 * C	158E421J-5-IQ	Capacitor	Polystyrene	420pF	±5%	25V	
C401, C402 * AH	158E911J-5-IQ	Capacitor	Polystyrene	910pF	±5%	25V	
C403, C404	153F152K-5-KW	Capacitor	Mylar	1500pF	±10%	50V	
C405, C406	157F475M-5-IU	Capacitor	Electrolytic	4.7uF	±20%	50V	
C407, C408	157F475M-5-IU	Capacitor	Electrolytic	4.7uF	±20%	50V	
D1, D2	N4801N60P-1	Diode	Germanium	2-1K60			
D3, D4	N484C321D-5	Diode	AFC	SVC321SPA			
D5, D6	48041480-2	Diode		1N4148			
D7	48041480-2	Diode		1N4148			
D8, D9	48040010-2	Diode		1N4001			
D10	N48400490-0	Rectifier	Bridge	RB152	100V	1.5A	
D11, D12	48040010-2	Diode		1N4001			
D13	483733V1-2	Diode	Zener	33V	1/2W		

SYMBOL NO.	PART NUMBER	DESCRIPTION	REMARKS
FL1, FL2 * AH	N27010546-1-0	Ceramic Filter 10.7MHz SFE10.7ML-A	
FL1, FL2 * C	N27010556-1-0	Ceramic Filter 10.7MHz, Murata SFE10.7MZ2-A	
FL3	N27010546-1-0	Ceramic Filter 10.7MHz SFE10.7ML-A	
FL4	N27010066-0	Ceramic Filter 450KHz SFZ450G	
FL401, FL402	N56002236-S	Coil 19KHz Filter 10DFF01	
FL5	N56002296-S	Coil FTZ Filter 10DFE01	
J1, J2	N21037202-0	Jack RCA 2 Pos. black, RJ-1020-020, Output	
J3, J4	N21037402-0	Jack RCA 2 Pos. yellow, RJ-1020-050, NAD Link	
JP1	N21028215-0	Headers 15-pins	
JP3	N21028203-0	Headers 3-pins	
JP4	N21028202-0	Headers 2-pins	
JP5	N21028206-0	Headers 6-pins	
J900 * AH	N21070641-0	Antenna Terminal F-type AJ-2019-040	
J900 * C	N21070681-0	Antenna Terminal DIN-type AJ-2016-040	
L2, L3	N18012R2M-M	Coil Choke 2.2uH ±20%	
L4	N1801680M-M	Coil 68uH ±20%	
L5	N56002276-S	Coil AM RF 5564102600	
L6	N56002286-S	Coil AM Oscillator 5564312800	
L7	N56002246-S	Coil AM IF 5565105200	
L8	N56002256-S	Coil FM, Primary 5565204300	
L9	N56002266-S	Coil FM, Secondary 5565204400	
Q1, Q2	N4851815Y-5	Transistor 2SC1815-Y	
Q3	N4851815Y-5	Transistor 2SC1815-Y	
Q4	N4851015Y-5	Transistor 2SA1015-Y	
Q5, Q6	N485C930E-5	Transistor 2SC930E	
Q7, Q8	N485C930E-5	Transistor 2SC930E	
Q9	N485C930E-5	Transistor 2SC930E	
Q10, Q11	N4851815Y-5	Transistor 2SC1815-Y	
Q12	N4851815Y-5	Transistor 2SC1815-Y	
Q13	N31303430-0	IC Sanyo DTS LM7000	
Q14	N31303390-0	IC Sanyo FM/AM Tuner LA1266	
Q15	N31303400-0	IC PLL MPX LA3401	
Q16	N31302020-1	IC Regulator, +5V 7805	
Q17	N485C546B-5	Transistor BC546B	
Q18	N31302520-1	IC Regulator, +12V 7812	
Q19	N31303520-0	IC Regulator, -12V uPC7912H	
Q20, Q21	N4851015Y-5	Transistor 2SA1015-Y	
Q22	N485363BL-5	Transistor N-JFET 2SK363BL	
Q23, Q24	N4851815Y-5	Transistor 2SC1815-Y	
Q25	N4851015Y-5	Transistor 2SA1015-Y	
Q401, Q402	N4851815Y-5	Transistor 2SC1815-Y	
Q403, Q404	N4851815Y-5	Transistor 2SC1815-Y	
R48A	N47561040-3-11	Resistor, Semi-Fixed, H3, 10X10 100K	
R48	N47562240-3-11	Resistor, Semi-Fixed, H3, 10X10 220K	
R62	N47563330-3-11	Resistor, Semi-Fixed, H3, 10X10 33K	
T1	N21028203-0	Headers 3-pins	
U1	N89100034-0	Tuner Module Mitsumi FE407-A16	
X1	N23000440-0	Crystal 7.2MHz 20ppm	
X2	N27030020-0	Ceramic Resonator 456KHz CSB456F11	
TRANSFORMER			
F1, F2 * AH	N51003120-1A	Fuse UL/CSA 5X20mm 315mA 250V	⚠
F1, F2 * C	N51003120-1B	Fuse SEMKO 5X20mm 315mA 250V	⚠
R83	N4707275J-2	Resistor Carbon Film 2.7M 1/2W ±5%	AH ⚠
T1	N18062100-0	Transformer EI-48	⚠

PACKING DIAGRAM

ITEM	PART NUMBER	NAME	QTY	REMARKS
40		COMPONENT	1	
41	N14971222-0	EPE BAG	1	
42	N14971072-0	UNIT POLYBAG	1	
43	N14901543-0-2	POLYFOAM	2	
44	N43013482-0	INSTRUCTION MANUAL COVER	1	
	N43013483-0	INSTRUCTION MANUAL (ENGLISH)	1	
	N43013484-0	INSTRUCTION MANUAL (FRENCH)	1	
	N43013485-0	INSTRUCTION MANUAL (GERMAN)	1	
	N43013486-0	INSTRUCTION MANUAL (SPANISH)	1	
45	N30301057-1	SAFETY INSTRUCTION SHEET	1	AH
46	N30301056-0	WARRANTY CARD	1	AH
47	N14971062-0	MANUAL POLYBAG	1	
48	N21070661-1	FM "T" 300 OHM ANTENNA	1	
49	N70093220-0	AM ANTENNA 200CM UL1015	1	
50	N21037302-0	RCA PLUG (MALE)	1	
51	N21036101-0	RF CONNECTOR PLUG (F TYPE)	1	AH
	N21036201-0	RF CONNECTOR PLUG (DIN TYPE)	1	C
52	N14761102-0	GIFT BOX	1	



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SERVICE MANUAL

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AM/FM TUNER

NAD ELECTRONICS LTD
LONDON

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